The Polarsys Maturity Model
Unconference workshop – session 2.
Measuring the different dimensions

`http://castalia.camp/dl/dashboard/index.html`

Polarsys Meeting
Ludwigsburg (Germany), October 27th 2014

POLARSYS
Open Source Tools for Embedded Systems

Structure of the presentation

1. Mapping Attributes
   - Mapping Attributes: Goals
   - Mapping Attributes: Questions
   - Mapping Attributes: Measures

2. Measures
   - Data Source: SonarQube
   - Data Source: Grimoire
   - Data Source: Rule-Checking, PMI

3. Discussion

Mapping Attributes

Mapping attributes

Follow a GQM approach

- Goal: main maturity attributes to be measured, Ecosystem, Process and Product
- Questions: needed to focus the study of the goals
- Measures: quantitative values associated to each question

Mapping attributes: goals

Main goals:

- Ecosystem: the maturity of the community around the project
- Process: the maturity of the process around the project
- Product: the maturity of the final product

Mapping attributes: goals

Ecosystem:

- Activity
- Diversity
- Responsiveness
- Support
- Visibility
- Usage
- User feedback

Mapping attributes: goals

Process:

- Configuration management
- Change management
- Intellectual property management
- Planning management
- Test management

Mapping attributes: goals

Product:

- Analysability
- Changeability
- Reliability
- Reusability

Mapping attributes: questions

Ecosystem -> Activity:

- Activity on the developer mailing list
- User mailing list activity
- Activity on the source code management system

Process -> Planning management:

- Is the project on time according to its schedule?
- Is the project having regular milestones?

Mapping attributes: measures

Ecosystem -> Activity -> Developers mailing activity:
- Number of posts in the developers mailing list in the last month

Ecosystem -> Activity -> Code activity:
- Number of commits in the last month
- Number of committed files in the last month

Ecosystem -> Activity -> Users mailing activity:
- Number of posts in the users mailing list in the last month

Measures

Measures

Some recommendations:

- Combination of measures for some attributes
- Single number for each measure
- Temporal specification
- Reuse of measurements when it makes sens
- Balance between simplicity and capturing the attribute

Measures

Three main data sources:

- Source code metrics: SonarQube
- Process and community metrics: Grimoire toolset
- Checks: PMI, PMD or Findbugs

Source code metrics: SonarQube

Some of the metrics:

- Function cloning, cyclomatic complexity, depth of inheritance tree
- Number of public attributes, number of public methods, comment rate
- % of lines covered by tests, number of total attributes, number of total methods

Process and Community metrics: Grimoire

- Number of commits, authors, number of committed files, file stability index
- Updates, authors or defect density in the issue tracking system
- Number of posts by developers or non developers in developer or users mailing lists
- Developer response ratio in mailing lists, number of threads

Checks: Rule-Checking tools, PMI

- SCM or ITS access info in the PMI, licenses identification,
- on time for next milestone, number of milestones, adherence to reusability tools
- non conformities index for reliability, reliability practice acquired

Discussion

Discussion

- Quality Attributes:
  - How are the quality attributes capturing your needs?
  - Do we need extra quality attributes?
- Measures:
  - Extra metrics per question?
  - Missing metrics that should be there?